



(11)

EP 2 584 177 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
11.04.2018 Bulletin 2018/15

(51) Int Cl.:
F02C 9/26 (2006.01) **F02C 3/22 (2006.01)**
F02C 9/40 (2006.01) **F02C 9/28 (2006.01)**

(43) Date of publication A2:
24.04.2013 Bulletin 2013/17

(21) Application number: **12188816.8**

(22) Date of filing: **17.10.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

• **Khan, Abdul Rafey**
Greenville, SC South Carolina 29615 (US)
• **Romig, Bryan Wesley**
Greenville, SC South Carolina 29615 (US)

(30) Priority: **20.10.2011 US 201113277352**

(71) Applicant: **General Electric Company**
Schenectady, NY 12345 (US)

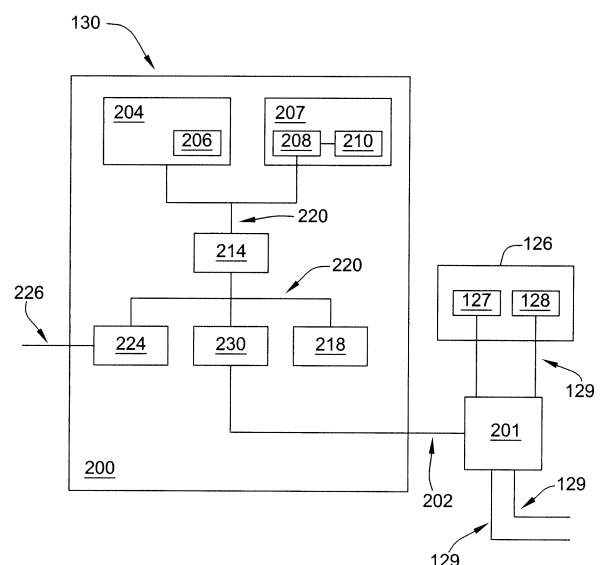
(74) Representative: **Cleary, Fidelma**
GPO Europe
GE International Inc.
The Ark
201 Talgarth Road
Hammersmith
London W6 8BJ (GB)

(72) Inventors:
• **Hughes, Michael John**
Greer, SC South Carolina 29615 (US)

(54) **Systems and methods for use in operating turbine engines**

(57) A control system (130) for use with a turbine engine (100) that is configured to operate at a rated power output is provided. The control system includes a computing device (200) that includes a processor (214) that is programmed to calculate an amount of fluid to be supplied for combustion in the turbine engine. The processor is also programmed to designate at least one nozzle of a plurality of nozzles to receive the fluid. Moreover, the control system includes at least one control valve (201) coupled to the computing device. The control valve (201) is configured to receive at least one control parameter from the computing device (200) for use in modulating the amount of the fluid to be channeled to the nozzle such that the rated power output is generated while emission levels are maintained below a predefined emissions threshold level.

FIG. 2



EP 2 584 177 A3



EUROPEAN SEARCH REPORT

Application Number
EP 12 18 8816

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 204 561 A2 (GEN ELECTRIC [US]) 7 July 2010 (2010-07-07) * figure 2 * * paragraph [0009] * * paragraph [0013] * * paragraph [0022] - paragraph [0024] * * paragraph [0041] * * claim 1 *	1-15	INV. F02C9/26 F02C3/22 F02C9/40 F02C9/28
X	US 2004/172949 A1 (STUTTAFORD PETER J [US]) 9 September 2004 (2004-09-09) * paragraph [0015] * * paragraph [0007] * * claim 1 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			F02C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 26 February 2018	Examiner Burattini, Paolo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 18 8816

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-02-2018

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2204561 A2	07-07-2010	CN 101793196 A	04-08-2010
		EP 2204561 A2	07-07-2010
		JP 5721944 B2	20-05-2015
		JP 2010156324 A	15-07-2010
		US 2010162678 A1	01-07-2010

US 2004172949 A1	09-09-2004	NONE	

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82